

## MAXIMILIAN SUNFLOWER

*Helianthus maximiliani*

Schrad.

Plant Symbol = HEMA2

Contributed by: USDA NRCS National Plant Data Center



D.D. Horn, 2004.  
TENN—University of Tennessee

### Alternate Names

*Helianthus dalyi*, *Helianthus maximilianii*, Maximilian sunflower, Maximilian's sunflower, Michaelmas-daisy.

### Uses

**Erosion control:** Maximilian sunflower has a perennial root crown and rhizomatous root system. Annual stems are produced from underground stems. This growth pattern allows Maximilian sunflower to spread and form dense plant clusters, reinforcing soil and preventing erosion.

**Ethnobotanic:** Native Americans used parts of this plant as sources of food, oil, dye, and thread. Pioneers planted Maximilian sunflowers near their

homes to repel mosquitoes and used the blossoms in bathwater to relieve arthritis pain. Sunflower seeds are eaten as snack items and sprinkled on salads and other foods.

**Industrial products:** The natural rubber present in Maximilian sunflower qualifies the plant as a potential source of industrial raw materials.

**Livestock:** Although the protein value of Maximilian sunflower is poor, it is a palatable livestock forage species. It remains green late into the fall and is consumed until the first frost makes it less flavorful. It is plentiful on ranges that are not closely grazed.

Moderate grazing can increase the presence of Maximilian sunflower.

**Ornamental:** The bright yellow flowers of Maximilian sunflower make it a popular choice for use in native gardens. It can be utilized as a hedge or natural screen because of its height.

**Restoration:** Maximilian sunflower is used as a conservation planting for habitat development, prairie restoration and landscaping, and range and pasture maintenance. It can be used in filterstrip plantings. It has been used with native grasses in Kansas to revegetate coalmine spoils.

**Wildlife:** Butterflies, beetles, and long- and short-tongued bees consume the nectar or pollen produced the flowers of Maximilian sunflower. Butterfly caterpillars feed on the foliage while moth caterpillars bore through the stems. Upland game birds, small non-game birds, and some waterfowl consume its seeds. Rabbits and groundhogs feed on young plants while elk, mule deer, white-tailed deer, and pronghorn antelope browse and graze older plants. It has poor nutritional value for these species. Habitat and cover are provided to birds and small mammals by individual plant clusters and dense colonies formed with other shrub-like plants.

### Description

**General:** Aster Family (Asteraceae). This native perennial has a stout, rhizomatous root system. It grows from 0.9 m to 2.5 m tall with stems occurring singly or in clusters. The central stem is stout, light green to light red, and covered with short, dense white hairs. Leaves are alternate, up to 30 cm long and 5 cm wide, sessile, narrowly lance-shaped, and

folded upward from the central vein. Leaf surfaces are covered with white hairs; margins are smooth or loosely toothed. Short inflorescence stalks emerge from the leaf axils, bearing one composite flower head and one to two leaves. Each inflorescence has two pale green bracts at its base, is 5 to 7 cm in diameter, and has 20 to 40 yellow ray flowers and many yellow disc flowers. Flowering occurs in September and early October. Fruits are achenes that ripen in October and November and are wind or animal dispersed.

The characteristic that distinguishes Maximilian sunflower from other *Helianthus* species is the grayish appearance given off by dense white hairs on the plant.

**Distribution:** Maximilian sunflower is native to the central United States, from Ontario, Michigan, and Ohio, west to Alberta, Montana, Wyoming, and Colorado and south to Texas. It may be sparsely introduced east and west of its native range. For current distribution, please consult the Plant Profile page for this species on the PLANTS Web site (<http://plants.usda.gov>).

**Habitat:** Maximilian sunflower occurs on rocky upland and loess hill prairies, rocky ledges, and along railways, roadsides, fences, and other disturbed areas. In drier regions, it is found along streams and near wetter areas.

In mixed-grass prairies, it is associated with bluestem, switchgrass, Russian thistle, silverberry, milkweed, and snowberry species. In tallgrass prairies, it is associated with big bluestem, switchgrass, Indian grass, heath aster, ironweed, and Canada goldenrod. In floodplain tallgrass prairies, it is associated with prairie cordgrass, spikeweed, Indian grass, big bluestem, switchgrass, compass plant, milkweed, and annual sunflower.

### **Adaptation**

The USDA hardiness zones for Maximilian sunflower are 3 to 9. Although it can grow in a variety of conditions, it prefers moist clay-like soils, soil depths of 50 cm or more, 250 to 1,270 mm annual precipitation, gentle slopes, and full sun. Soil, moisture, and topography can be variable, but Maximilian sunflower will not tolerate shade. It tends to grow very tall in moist rich soil and may become top-heavy when in bloom. Growth is poor on gravel, dense clay, or saline soils.

Maximilian sunflower plants are allelopathic. They produce chemicals that hinder the growth of

neighboring plants. These chemicals are not harmful to livestock and wildlife.

### **Establishment**

In early winter, rake Maximilian sunflower seeds into loose topsoil and cover with 0.25 to 0.5 inch of soil or mulch. A long cold period is required before germination. The average number of seeds per pound varies by location. The South Dakota Plant Materials Center has listed 250,000 seeds per pound while both the North Carolina Department of Transportation and Texas A&M University report 182,000 seeds per pound. The appropriate seeding rate for pure Maximilian sunflower stands is 5 pounds per acre, allowing space between germinated plants.

If used as part of a prairie seed mixture, Maximilian sunflower seeds should be included at a rate of 0.1 to 0.25 pound per acre. Optimal seeding times are November to May in the central Great Plains and January to March in the southern Great Plains. In Nebraska, Maximilian sunflower established best when weeds were controlled mechanically. Seedling vigor is good.

Growth occurs in late spring and summer with some flowering by the end of the first season. Most Maximilian sunflower plants are not fully developed until the second season. Plants primarily spread by rhizomes after establishment.

### **Management**

Maximilian sunflower plants growing on rich, fertile sites will grow tall and spindly. Weak stems will cause the plants to fall and can be staked to remain upright. Older stems can be mechanically cut back at the end of the season to make room for new sprouts.

Maximilian sunflower exhibits fire tolerance in its dormant stage. Seedlings will emerge on open, post-burned sites from the underground seedbank and rhizomes. Following fire in North Dakota, Maximilian sunflower grew taller, stiffer, and seeded more vigorously. Research suggests that plant performance increases following fire in disturbed, invaded areas but not on undisturbed areas. Fire removes competition and opens up the canopy for Maximilian sunflower in the disturbed areas.

### **Seeds and Plant Production**

Seeds are ready for collection in late October and November. They are moist stratified for 56 days. Germination occurs at an alternating cycle of 30°C daytime and 15°C nighttime temperatures. The optimum soil temperature for germination is 20°C to

30°C. Seventy percent of seeds will germinate in 7 to 25 days.

One-year-old plants sprout new shoots that can be dug up and cut from the parent plant. Division and transplantation should take place in February or March.

#### **Cultivars, Improved, and Selected Materials (and area of origin)**

The USDA NRCS Plant Materials Center has released Maximilian sunflower cultivars 'Aztec' and 'Prairie Gold' for conservation use. 'Aztec' was released for the purposes of wildlife food, livestock forage cover, natural hedges, screens, filterstrips, and as ornamental landscape plants. 'Prairie Gold' was released for critical area reseeding and wildlife food plantings. These plant materials are readily available from commercial sources.

#### **References**

Agricultural Research Center. 2004. *GRIN taxonomy* (<http://www.ars-grin.gov/cgi-bin/npgs/html/index>, 14 June 2004). USDA, Beltsville.

Baskin, C.C. and J.M. Baskin. 2002. *Propagation protocol for production of container Helianthus maximiliani Schrad. plants*. (<http://www.nativeplantnetwork.org>, 14 June 2004). College of Natural Resources, University of Idaho, Moscow.

Bismarck Plant Materials Center and Bridger Plant Materials Center. 2001. *Planting guide for five native forbs/legumes released for conservation use* (<http://plant-materials.nrcs.usda.gov/pubs/ndpmcpg2000rel.pdf>, 14 June 2004). USDA NRCS Bismarck Plant Materials Center, Bismarck.

Dillard, J. 1999. *Sunflowers for wildlife in the cross timbers* ([http://www.tpwd.state.tx.us/publications/wildlife\\_habitat/pdf\\_docs/sunflowers\\_for\\_wl.pdf](http://www.tpwd.state.tx.us/publications/wildlife_habitat/pdf_docs/sunflowers_for_wl.pdf), 14 June 2004). Texas Parks and Wildlife Department, Austin.

Faucon, P. 2003. *Maximillian sunflower* (<http://www.desert-tropicals.com>). Desert Tropicals, Phoenix.

Haddock, M. 2004. *Kansas wildflowers and grasses* (<http://www.lib.ksu.edu/wildflower/>, 14 June 2004). Kansas State University, Manhattan.

Harrington, M. 2004. *Wildflowers on North Carolina Roadsides*, ([http://www.doh.dot.state.nc.us/operations/dp\\_chief\\_eng/roadside/wildflowerbook/](http://www.doh.dot.state.nc.us/operations/dp_chief_eng/roadside/wildflowerbook/),

14 June 2004). North Carolina Department of Transportation, Raleigh.

Hilty, J. 2004. *Helianthus maximiliani* ([http://www.illinoiswildflowers.info/prairie/plantx/mx\\_sunflowerx.htm](http://www.illinoiswildflowers.info/prairie/plantx/mx_sunflowerx.htm), 14 Jun 2004). Prairie Wildflowers of Illinois Project, Urbana.

Horn, D.D. 2004. *Helianthus maximiliani*. (<http://tenn.bio.utk.edu/vascular/vascular.html>, 14 June 2004). University of Tennessee, Knoxville.

National Plant Materials Center. 2004. *Helianthus maximiliani*. ([http://plant-materials.nrcs.usda.gov/release\\_index.html](http://plant-materials.nrcs.usda.gov/release_index.html), 14 June 2004). USDA, Beltsville.

Native Plant Information Network. 2001. *Propagation datasheets* (<http://www.wildflower2.org/NPIN/Clearinghouse/Propagation/propsheets.html>, 14 June 2004). Lady Bird Johnson Wildflower Center, Austin.

Stevens, R. and C. Coffey. 2004. *Plant Image Gallery* (<http://www.noble.org/imagegallery/index.html>, 14 June 2004). Samuel Roberts Noble Foundation, Ardmore.

Tober, D.A. 2000. *Notice of release: Medicine Creek Maximilian sunflower (Helianthus maximiliani)* (<http://plant-materials.nrcs.usda.gov/pubs/ndpmcrnhema2medi.pdf>, 14 June 2004). USDA-NRCS Bismarck Plant Materials Center, Bismarck.

Tveter, D. 2004. *How to grow Maximiliani sunflower* (<http://www.dontveter.com/howtogrow/helimaxi.html>, 14 June 2004). The How to Grow it Project, Chicago.

Walsh, R.A. 1993. *Helianthus maximiliani*. In: Fire Sciences Laboratory. Fire Effects Information System (<http://www.fs.fed.us/database/feis/>, 14 June 2004). Rocky Mountain Research Station, USDA Forest Service, Missoula.

Wildseed Farms. 2004. *Helianthus maximiliani*. In: Aggie Horticulture. Wildflowers in bloom (<http://aggie-horticulture.tamu.edu/wildseed/>, 14 June 2004). Texas A&M University, College Station.

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